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1/77

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1. Your reference

PHGB000193

2. Patent application number

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0031615.8

3. Full name, address and postcode of the or of each applicant (*underline all surnames*)KONINKLIJKE PHILIPS ELECTRONICS N.V.
GROENEWOUDSEWEG 1
5621 BA EINDHOVEN
THE NETHERLANDSPatents ADP Number (*if you know it*)

If the applicant is a corporate body, give the country/state of its incorporation

74192914001

THE NETHERLANDS

4. Title of the invention

IMPROVED TELEVISION SERVICES

5. Name of your agent (*if you have one*)"Address for service" in the United Kingdom to which all correspondence should be sent (*including the postcode*)Andrew G. White
Philips Corporate Intellectual Property
Cross Oak Lane
Redhill
Surrey RH1 5HAPatents ADP number (*if you know it*)

07658663001

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Country

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Number of earlier application

Date of filing
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Description	7
Claims(s)	2
Abstract	1
Drawings	1

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Request for preliminary examination and
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(D.Melbourne)

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DESCRIPTION**IMPROVED TELEVISION SERVICES**

- 5 This invention relates to a method and apparatus to provide improved television services.

A set top box is a piece of apparatus commonly used to receive television broadcasts, typically from satellite, cable or terrestrial transmissions. With the rapid expansion of Internet services, linkage of a set top box (STB) to 10 the Internet is already known. A connection to the Internet is established using the STB which includes an Integrated Receiver/Decoder (IRD). A television or other display device is connected to the STB for viewing STB output, although STB functionality can be built into the television set or display. Such connections allow an association to be made between television programmes or 15 advertisements and multimedia content present on the Internet, for example films, images, three dimensional models, audio samples, web pages, JAVA applications. Viewers can choose to view the additional information while watching a television programme or advert.

However, the speed of information retrieval from the Internet is 20 unpredictable.

An additional service which can be provided for a viewer by a STB is the facility of an Electronic Programme Guide (EPG). Viewers have an interactive channel guide showing a selection of information about current and future TV 25 programmes. Several software programmes to provide EPGs are commercially available for implementation on a STB, as described at www.managingchange.com/mediums\inter-tv\epg.htm. An EPG may, for example, allow viewers to view available programmes by subject, date, time and obtain background information on their favourite actors:

30 In the context of the analogue television domain, documentation at www.cbp.org/research/infopackets/packet32.html discusses the possibility of

embedding data in the video blanking interval (VBI) of television broadcasts. On reception of such data, receiving equipment detects the presence of such embedded data causing an on-screen icon to be generated which indicates to a viewer the existence of material of possible interest on the world wide web.

- 5 Clicking on the link causes the establishment of a modem connection to access the producers or advertisers web site for real time viewing. It is envisaged that in the future the cross over to such material will be 'immediate' with the text of the documentation reciting that 'the viewer [is] presented with a set off screens whose content is relayed directly from the hard disk where it has been pre-loaded either during the start of the programme or in the early hours of the morning . . .' The discussion is restricted to the analogue domain and gives no indication of how material for pre-loading is selected or how the mechanism of such pre-loading operates.
- 10

Furthermore, problems may be encountered because the VBI information can sometimes be stripped during the local broadcast stage due to technical or political reasons.

It is an object of the invention to provide a method and apparatus allowing supply to a set top box of Internet-based material in a more satisfactory manner than is currently possible.

20

According to the present invention there is provided a method of providing Internet-based multimedia services to a set-top box facility provided with Internet connectivity characterised by the steps of :-

- 25 providing to the set top box advance information related to the scheduled broadcast time of material to be broadcast;

the set top box connecting to the Internet in advance of the scheduled broadcast time to receive multimedia material related to the material to be broadcast, causing that material to be stored, and providing a visual indication during broadcast of the material to be broadcast that the additional multimedia material is available.

Also according to the invention there is provided a set top box facility

- having internet connectivity, characterised in that the set top box is arranged to send advance enquiry messages via the Internet for any programme-related multimedia material; to cause such material to be cached in the STB; to provide an indication during broadcast of the programme to which the material relates
- 5 that additional multimedia material is available, and to provide access to the additional material at the viewers option.

Other aspects and optional features of the present invention appear in the appended claims which are incorporated herein by reference and to which the reader is now referred.

10

The invention will now be described by way of example only with reference to figures 1 and 2 in which :-

Figure 1 illustrates in highly schematic form of set top box facility and display device; and

15 Figure 2 illustrates the flow of data during one example of operation of the invention.

In Figure 1 the main components of a STB 10 comprise a central processing unit CPU 12; a random access memory RAM 14; a read only
20 memory ROM 16; a receiving device 18 which receives signals from a broadcaster as indicated by the arrow 20; a video display generator unit VID 22 and an Internet interface 24 connectable by a two way link indicated by the arrow 26 to the world wide web www 28. The set is preferably provided with storage 29 which may take the form of a hard disc drive, writable optical disc or
25 other read / write storage device. Output from the video display generator unit 22 is provided to display screen 30 (which may be a television set) for viewing.

Optionally the set 10 also has a Conditional Access Mechanism 32, which prevents a viewer from seeing unpaid-for programmes.

An electronic programme guide (EPG) facility is accessible via the STB
30 which displays information to the viewer about television broadcast programmes. Regularly updated data needs to be provided to the EPG to

ensure that correct information about programming is displayed to the viewer. In order to obtain such data, the STB may intermittently connect through the Internet interface 24 to the Internet 28 to retrieve information from an internet site on forthcoming television programmes. Such data may also be provided by
5 the broadcaster and may be embedded, for example, in a digital television broadcast stream in which case the data is received through the receiving device 20. Depending on the sophistication of the EPG and the requirements of the user, the may EPG allow users to check programme availability by subject or by date and time; to provide users with background information on actors,
10 directors, film locations and to build personal lists of favourite channels and so forth. Advanced search options may also be available.

In accordance with the invention, programme entries in the EPG may in addition may also contain links to Internet sites holding information related to or associated with the programme. Alternatively the STB may be provided to
15 search the web in advance of the scheduled broadcast time for programme-related information in a broader sense, for example based on words or phrases contained in entries of the electronic programme guide. In either case the STB then downloads and stores locally the information of interest in a cache type operation. The information is then available locally in time for when the
20 television programme or advert with which the information is associated with is actually broadcast. The data may be cached on hard disc, in memory or any suitable storage means such as optical disc as will be appreciated by the person skilled in the art.

For example, a broadcaster may want to provide viewers with additional
25 information about a particular TV programme, such as a soap opera. The broadcaster puts that additional information on the Internet. The EPG specifies the existence of and location of material to be cached by the STB. During a programme or advertisement for which associated information exists, the STB causes an icon to be shown to indicate that additional multi-media material is
30 available. If the viewer wishes to see such material instead of the adverts, the STB displays it. The viewer appears to have virtually instantaneous access to

the associated information without the delay so characteristic of Internet access.

In a variation, there may be multiple sets of associated information which the broadcaster wants viewers to receive. For example consider three sets of web pages where the broadcaster would like the viewer to look at the first set
5 before the programme is broadcast; the second set during an advert break in the broadcast; and the third set when the programme has finished. The three sets of pages are given time-locks based on time of day to ensure that the web pages cannot be viewed before the assigned times. All three sets are cached before the broadcast with the time locks included in the cached material. The
10 viewer can chose to view each set, but not in advance, for the second and third sets. Encryption mechanisms may be required for correct operation of such a scheme.

In these examples, the multimedia content can be located in a dedicated server devoted to the soap opera, and the EPG is provided with a key pointing
15 to that server.

In another example, an advertiser may be advertising a particular toy a few weeks before Christmas. The advertiser puts on the Internet information about the toy additional to the television advertisement, for example a three dimensional image and sound information, and associates a pointer to the
20 information location on the internet. ie associates it to a programme during which the advert will be broadcast. The EPG causes location, download and storage of this information i.e. a local caching process. During viewing of the programme an icon indicates additional multi media material is available, and the viewer can chose whether to view the multimedia material simultaneously
25 with the broadcast on a split screen, as an overlay either transparent or opaque, or as a screen insert 34 as shown in Figure 1.

As an alternative to the EPG providing the location of Internet material to be retrieved, a programme provider or advertiser can provide the advance information to drive the search.

30 In this arrangement the data flow is illustrated in Figure 2. An advertiser
40 provides advertising information and payment to a broadcaster 42 who

makes scheduling information available to the STBs 44, 46..... The advertiser 40 also puts advert-related multimedia material on the Internet 28, which is accessed by the STBs 44, 46 in advance of broadcasting of the advert.

- The multimedia data placed on the Internet by the advertiser or
- 5 broadcaster can be addressed by a single URL (Uniform Resource Locator) although of course one URL can be used to access several web pages, several three dimensional models etc. The single URL is inserted into the broadcast stream in the designated place, as is the case with the well-known Teletext service, to indicate when the icon should be displayed. Codes can also be
- 10 added to indicate to the STB when to make the multimedia material available for downloading, and how long to keep it cached. Alternatively, the EPG trigger information can be included in the broadcast stream, e.g. digital MPEG 2.

Conveniently, the STB is arranged to connect to the web so as to cache required information at a time when the television set 10 is not likely to be in

15 use, such as in the early hours of the morning.

In yet another example, the STB is arranged to cache any web pages related to the viewer's ten favourite programmes. The STB can be automated to work out the ten favourites, or the viewer can select them and input them manually. The cached favourites can be offered to a viewer when he begins to

20 surf the web.

In a variation, a viewer may manually set priorities for a number of URLs, or the STB may use automatic profiling of the viewer to set the priorities, and the STB then searches the web automatically for the appropriate URLs.

In yet another variation, third parties may be employed to surf the web for

25 information about certain programmes, and the STB can be operated accordingly. For example, if the EPG indicates to the STB that a particular soap is to be broadcast, the STB needs to know where to look for related multimedia. One solution is to cause the STB to query a server on the Internet for a list of URLs related to that soap, preferably the best such sites. A third party can be

30 paid to create such a list, and to update it.

It will be clear from the examples that the STB will ideally have the

capability to deal any variety of multimedia material that needs to be handled, such as three dimensional rendering of an article that is to be advertised. Preferably the STB must be capable of handling JAVA applets. To assist with such requirements the STB may be provided with the capability of downloading 5 software to update the STB as software usage and standards evolve.

A URL to be used according to the invention may be given a particular characteristic or may be sent in a particular manner so as to provide a very high probability of data being downloaded, i.e. of the viewer choosing to click onto the additional multimedia material. Such a URL could provide additional 10 satisfaction to an advertiser.

The information for the EPG may be carried in a broadcast stream, such as digital MPEG 2. The broadcast stream may carry a relatively diverse selection of information.

CLAIMS

- 1 A method of providing Internet-based multimedia services to a digital television set having a set top box facility characterised by the steps of :-
 - 5 providing to the set top box advance information related to the scheduled broadcast time of material to be broadcast; the set top box connecting to the Internet in advance of the scheduled broadcast time to receive multimedia material related to the material to be broadcast, causing that material to be cached, and providing a visual indication
 - 10 during broadcast of the material to be broadcast that additional multimedia material is available.
- 2 A method according to Claim 1 in which the material to be broadcast is a scheduled television programme or an advertisement to be broadcast during a scheduled programme and the advance information is provided to the set top box by an electronic programme guide facility in the television set.
- 3 A method according to Claim 1 in which the material to be broadcast is a television programme or an advertisement and the information is provided to the set top box by a broadcaster.
- 4 A method according to Claim 1 or Claim 2 in which the advance information relates to a pre-determined number of the viewer's favourite programmes.
- 5 A method according to any preceding claim in which the multi-media material is indicated by a URL.
- 30 6 A method according to Claim 5 in which said URL is inserted into a broadcast stream to determine when said visual indication is to be provided to

the viewer.

7 A method according to any preceding claim in which the multi-media material is viewable simultaneously with the broadcast programme or
5 advertisement by means of a split screen or screen insert.

8 A digital television set (10) comprising world wide web interface means (24) and a set top box facility, characterised in that the set top box is arranged to send advance enquiry messages via the Internet (28) for any
10 programme-related multimedia material; to cause such material to be cached in the set; to provide a visual indication during broadcast of the programme to which the material relates that additional multimedia material is available, and to provide access to the additional material at the viewers option.

15 9 A television set according to Claim 8 further comprising an electronic programme guide arranged to store information relating to forthcoming programmes, the guide being further arranged to search the Internet for programme-related material.

20 10 A television set according to Claim 8 or Claim 9 in which the additional multi-media material can be viewed on a split screen or screen insert (34).

ABSTRACT**IMPROVED TELEVISION SERVICES**

- 5 An electronic programme guide in a digital television (10) is arranged to search the Internet (28) for multimedia material related to a forthcoming programme; a set top box stores the material in a cache; indicate during broadcast that the material is available; and if a viewer chooses to do so, provides instant access to the cached material.
- 10 The material may relate to an advertised toy; to a viewer's top ten favourite programmes; or maybe time-locked material to be viewed during and/or after a soap opera.

Figure 2

15

1/1

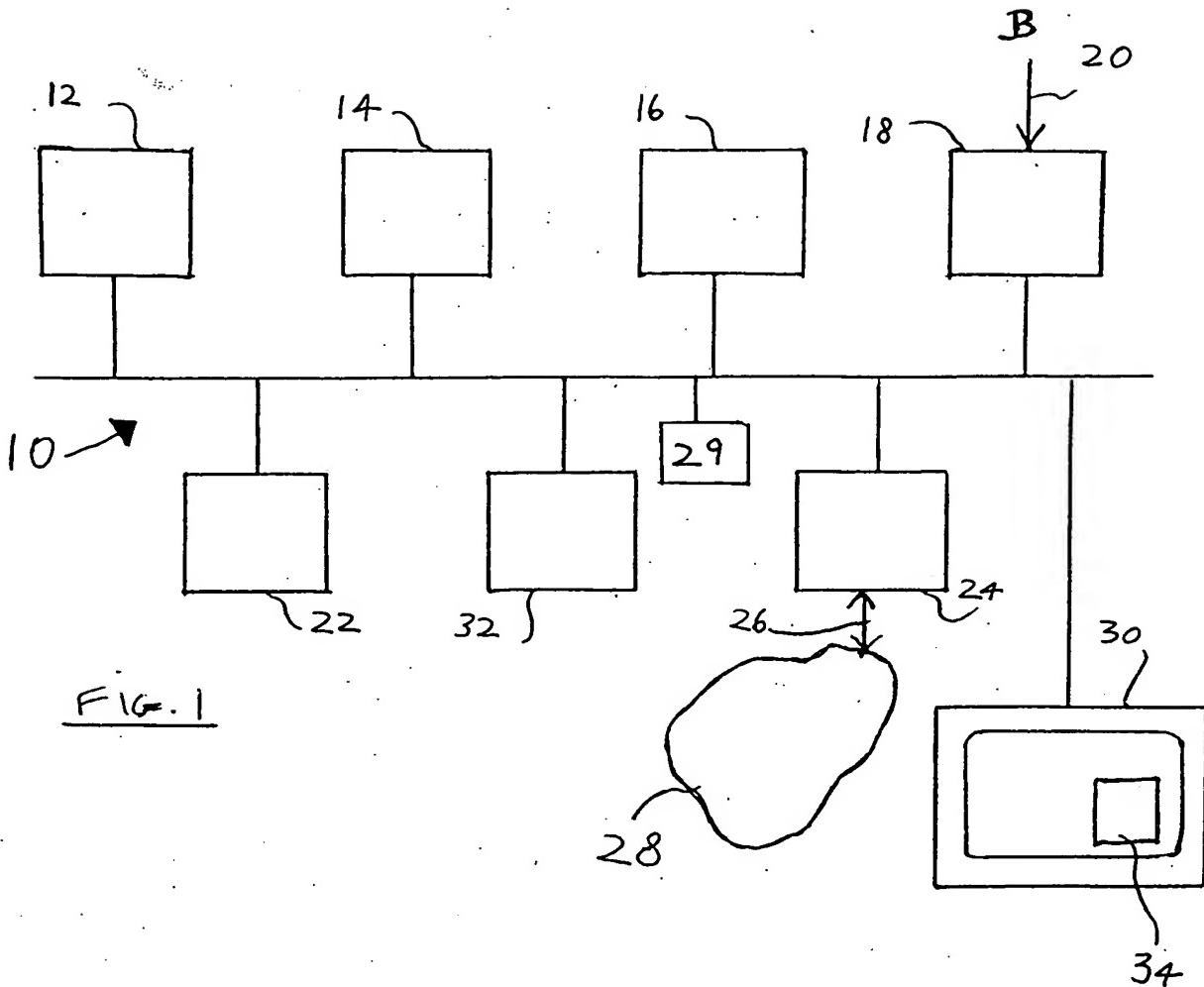


FIG. 1

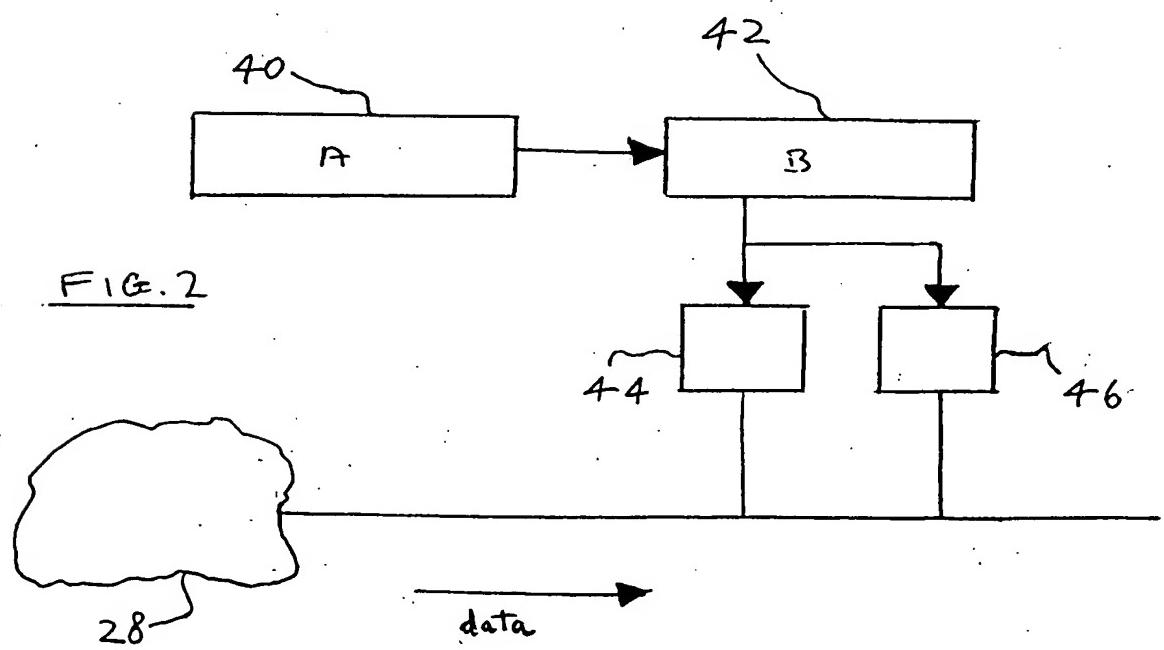


FIG. 2

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